TRENDS IN
PHARMACOLOGICAL
SCIENCES

REFERENCE EDITION

Volume 8

1987

CONTENTS

JANUARY

Two new thrombolytic agents give 'striking results', *John J. G. Houben* 1

News
The WHO classification of calcium antagonists, *Paul M. Vanhoutte and Rodolfo Paoletti* 4

Mosaic
Current Awareness:
Protease inhibitor therapy in emphysema: a promising theory with problems, *George Weinbaum and Victor V. Damiano* 6
Closer to Parkinson's disease: MPTP and the aging nervous system, *J. William Langston* 7
Airway smooth muscle responsiveness: modulation by the epithelium, *Stephen G. Farmer* 8
Glucocorticoids: new insights into their molecular mechanisms, *M. N. Alexis* 10
New Techniques:
Tissue slicing and culturing revisited, *Klaus Brendel, A. Jay Gandolfi, Carlos L. Krumdieck and Peter F. Smith* 11
This and that: risk and resurrection, *B. Max* 16

Letters
Could DAA modulate norephinephrine storage function? *Philip S. Portoghese* 18
A more expansive interpretation, *Thomas Klockgether, Lechoslaw Turski and Karl-Heinz Sontag* 20

Reviews
Receptor regulation: evidence for a relationship between phospholipid metabolism and neurotransmitter receptor-mediated cAMP formation in brain, *S. J. Enna and E. W. Karbon* 21
Airway neuropeptides and asthma, *Peter J. Barnes* 24
Hormonal regulation of protein tyrosine kinase activity, *J. Ramachandran and Axel Ullrich* 28
Recent progress in identifying nicotinic cholinoceptors in mammalian brain, *Paul B. S. Clarke* 32
Stress – the neglected variable in experimental pharmacology and toxicology, *W. H. Vogel* 35

Books
Chemistry and Toxicology of Pyrrolizidine Alkaloids, *by A. R. Mattocks* 38
Opioid Analgesics, Chemistry and Receptors, *edited by A. F. Casey and R. T. Parfitt* 39

FEBRUARY

Complexity apparent in muscarinic mechanisms, *Sasson Cohen and Mordechai Sokolovsky* 41

Obituary: Vasiliy Vasilievich Zakusov, *K. S. Rayevsky* 42

Mosaic
Current Awareness:
5-HT_3 receptors and cytotoxic drug-induced vomiting, *J. R. Fozard* 44
'Selective' lesions of brain neurotransmitters can be misleading, *Wojciech Danysz, Christopher J. Fowler, Sven Ahlenius and Trevor Archer* 45
Prodynorphin as a source of [Leu]enkephalin, *John R. Traynor* 47
Angiotensin II receptors: one type coupled to two signals or receptor subtypes? *J. Adolfo García-Sáinz* 48
Computers:
Dose–response models: similarity with population growth dynamics, *Vladimir Pliška* 50

Letters
Adenosine-induced bronchoconstriction, *D. Delbro and O. Nordström* 52
Monitoring for drug safety, *I. Ralph Edwards* 52

Feature
The road to the phosphoinositide-generated second messengers, *Lowell E. Hokin* 53

News
Common link to K^+ channels 56

Reviews
Common modes of drug action on Na^+ channels: local anesthetics, antiarrhythmics and anticonvulsants, *William A. Catterall* 57
Facilitation of memory and cognition by drugs, *George A. Heise* 65
The renin–angiotensin system*, *M. B. Vallotton* 69

Books
Neurotransmitter Actions in the Vertebrate Nervous System, *by M. A. Rogawski and J. L. Barker* 74
Clinical Pharmacology, *by Paul Turner, Alan Richens and Philip Routledge* 75
Molecular Volumes in Chemistry and Biology: Applications including Partitioning and Toxicity, *by J. C. McGowan and A. Mellors* 76

MARCH

Video teaching – glamour without effect, *Ewan MacDonald and Veijo Saano* 77

Current Awareness:
Receptor regulation of calcium entry, *Colin W. Taylor* 79
(−)-Tetrahydropalmatine and its analogues as new dopamine receptor antagonists, *Jin Guo-zhang* 81
Sweet and bittersweet memories, *Ivan Izquierdo* 83

Current Techniques
Recent developments in the determination of acetylcholine and choline, *Yuji Maruyama, Yasushi Ikarashi and C. Leroy Blank* 84
This and that: on method and muricide, *B. Max* 87

Letters
Selective $GABA_A$ antagonists? *David R. Curtis and Bruce D. Gynther* 90

Viewpoint
Nomenclature and classification of receptors and binding sites: the need for harmony, *Jack Peter Green* 90

Reviews
Resolving the structure of the Ca^{2+} channel by photoaffinity labelling, *Hartmut Glossmann, David R. Ferry, Jörg Striessnig, Alexandra Goll and Kurt Moosburger* 95
Toxicity of interferon and interleukin, *Karl Fent and Gerhard Zbinden* 100
Psychotropic drugs and human 5-HT neuroendocrinology, *P. J. Cowen* 105
FOCUS ON DISEASE: Duchenne muscular dystrophy: pathogenesis and pharmacology, *J. Elbrink, S. K. Malhotra and M. G. Elleker* 109

Books
The Blood–Brain Barrier in Health and Disease, *edited by A. J. Suckling, M. G. Rumsby and M. W. B. Bradbury* 113
Progress in Brain Research: Vol. 66, Peptides and Neurological Disease, *edited by P. C. Emson, M. Rosser and M. Tohyama* 114
Analytical Methods in Human Toxicology, *by A. S. Curry* 114
Synthetic Peptides as Antigens, Ciba Foundation Symposium 119, *edited by Ruth Porter and Julie Whelan* 115

APRIL

Three types of Ca^{2+} channel explain discrepancies, *M. Spedding* 115

Drug Regulatory News 117

Meeting Report
Traditional notions of psychopharmacology reassessed at new-style meeting, *R. D. Porsolt* 118

* see errata

Current Awareness:
A nuclear localization signal in steroid hormone receptors? *B. Wolff, R. B. Dickson and J. A. Hanover* 119
Antibiotics which kill nongrowing bacteria, *Elaine Tuomanen* 121

Letters
A premature proposal? *Jim Docherty* 123
Flavahan and Vanhoutte reply, *N. A. Flavahan and P. M. Vanhoutte* 124

Viewpoint
Do antiestrogens and antiprogestins act as hormone antagonists or receptor-targeted drugs in breast cancer? *Henri Rochefort* 126

Reviews
Lithium and inositol lipid-linked signalling mechanisms, *Alan H. Drummond* 129
Old and new concepts in teratogenicity testing, *Beat Schmid* 133
Photoactivatable drugs, *Hagan Bayley, Francis Gasparro and Richard Edelson* 138
Fungal epipolythiodioxopiperazine toxins have therapeutic potential and roles in disease, *T. William Jordan and Stephen J. Cordiner* 144
'Cytoprotection' in gastrointestinal pharmacology, *S. Szabo and I. Szelenyi* 149

Trade TiPS 154

Books
Laboratory Animal Husbandry – Ethology, Welfare and Experimental Variables, *by Michael W. Fox* 155

MAY

Can animal models really predict anxiety?, *Alison Abbott* 157

Current Awareness:
New class of microbial toxins ADP-ribosylates actin, *Klaus Aktories, Michael Bärmann, Gursharan S. Chhatwal and Peter Presek* 158
On leaving drunks alone, *Ivan Izquierdo* 161
Pharmacology of the isoquinoline sulfonamide protein kinase C inhibitors, *Hiroyoshi Hidaka and Masatoshi Hagiwara* 162

Current Techniques
Towards animal models of mental retardation, *Trevor Archer* 165
This and that: Helen's heart and plaster of Paris, *B. Max* 166

Letters
Dual role of neuropeptidergic system in pathology of asthma?, *Vincenzo di Marzo, John R. Tippins and Howard R. Morris* 168
Neurotransmission and ischemia, *R. Schmidt-Kastner* 169

Viewpoint
What is the molecular nature of general anaesthetic target sites?, *N. P. Franks and W. R. Lieb* 169

Reviews
Receptor or enzyme: the puzzle of NTE and organophosphate-induced delayed polyneuropathy*, *M. K. Johnson and Marcello Lotti* 174
Pyrazoloquinolines: second generation benzodiazepine receptor ligands have heterogeneous effects, *Steven J. Cooper, Tim C. Kirkham and Lorna B. Estall* 180
The enigma of the organ-specificity of carcinogenic nitrosamines, *R. Preussmann and M. Wiessler* 185
Isosteric regulation of the acetylcholine receptor, *Jayant B. Udgaonkar and George P. Hess* 190

Books
Discoveries in Pharmacology, Vol. 3. Pharmacological Methods, Receptors and Chemotherapy, *M. J. Parnham and J. Bruinvels* 193
False Prophets: Fraud and Error in Sciences and Medicine, *Alexander Kohn* 193
Calcium in Muscle Activation, A Comparative Approach, *J. C. Rüegg* 194
Biochemical Toxicology: a practical approach, *K. Snell and B. Mullock* 195
The Biochemical Basis of Neuropharmacology. Fifth edition, *Jack R. Cooper, Floyd E. Bloom and Robert H. Roth.* 195

Toxicology – The Basic Science of Poisons. Third edition *edited by Curtis D. Klaassen, Mary O. Amdur and John Doull* 195

Software Review
Bibliographer, *Trevor Rae* 196

JUNE

SARs: the receptor side of the coin, *Morley D. Hollenberg* 197

Current Awareness:
5-HT receptors and the sweet tooth, *Steven J. Cooper and Joanna C. Neill* 199
Interactions of Ca^{2+} antagonists at 5-HT_2 and H_2 receptors and GABA uptake sites, *F. V. DeFeudis* 200
Cromoglicate, plasma exudation and asthma, *Carl Persson* 202

Current Techniques
Uses and limitations of strychnine as a probe in neurotransmission, *Sarah E. Barron and Paul S. Guth* 204

Letters
'Master-slave' demonstrations, *Neil Scott* 207
Classification and function of CCK receptors, *C. T. Dourish and D. R. Hill* 207
Domenico Regoli replies, *D. Regoli* 208

Viewpoint
Which G protein subunits are the active mediators in signal transduction?, *Lutz Birnbaumer* 209

Reviews
Pharmacological probes of the mammalian circadian clock: use of the phase response curve approach, *Fred W. Turek* 212
Patch-clamp recording from single glutamate receptor channels, *Stuart G. Cull-Candy and Maria M. Usowicz* 218
Actions of synthetic and endogenous steroids on the $GABA_A$ receptor, *J. J. Lambert, J. A. Peters and G. A. Cottrell* 224
Pharmacological and toxicological exploitation of amine transporters, *Svante B. Ross* 227
Effects of neuropeptide Y on the cardiovascular system, *L. Edvinsson, R. Håkanson, C. Wahlestedt and R. Uddman* 231

Books
Discoveries in Pharmacology, Vols. 1–3, *edited by M. J. Parnham and J. Bruinvels* 235
Annual Review of Neuroscience, *edited by W. Maxwell Cowan, Eric M. Shooter, Charles F. Stevens and Richard F. Thompson* 236

JULY

Pharmacology downunder, *M. J. Rand* 237

Meeting Report
Modulating glutamate pharmacology, *David Lodge* 243

Current Awareness
Discontinuation syndrome in rats chronically treated with centrally acting α-adrenoceptor agonists, *Bevyn Jarrott and Stephen J. Lewis* 244
Radioprotective agent WR2721 opens new perspective in treatment of hyperparathyroidism and hypercalcemia, *Suzanne Hirschel-Scholz and Jean-Phillipe Bonjour* 246
New antihistamines free of sedative side-effects, *Anthony N. Nicholson* 247

Current Techniques
Human cell cultures for screening anti-cancer drugs, *I. Bertoncello and T. R. Bradley* 249

Letters
Receptor nomenclature: how, who and when?, *Michael Williams* 251
Statistics and pharmacology: the Bloody Obvious Test, *I. Kitchen* 252
Recycling random numbers, *John David Sinclair* 253

Viewpoint
Does furosemide have vasodilator activity?, *John F. Gerkens* 254

Reviews
The behaviour of foreign substances in the human body, *Adrien Albert* 258
Veterinary toxicology in Australia, *David Leaver* 262
Functional evidence for differential regulation of β-adrenoceptor subtypes, *Stella R. O'Donnell and Janet C. Wanstall* 265
Interaction of angiotensin with noradrenergic neuroeffector transmission, *D. F. Story and J. Ziogas* 269
Autoradiographic localization of receptors in the cardiovascular system, *R. J. Summers, P. Molenaar and J. A. Stephenson* 272
How metabolites may augment some psychostimulant actions of amphetamine, *Donald Dougan, Denis Wade and Patricia Duffield* 277

Books
The Psychopharmacology and Treatment of Schizophrenia, *edited by P. B. Bradley and S. R. Hirsch* 281
Modern Pharmacology (2nd edition), *edited by Charles R. Craig and Robert E. Stitzel* 282

AUGUST

New class of antihypertensive acts by opening K^+ channels, *Arthur H. Weston and Alison Abbott* 283

Current Awareness
PAF closely mimics pathology of asthma, *Peter J. Barnes and K. Fan Chung* 285
Moving away from animal tests for the standardization of insulin formulations, *John Trethewey* 287
Is histamine a human coronary vasospastic substance?, *Noboru Toda* 289
This and that: survival and certainty, *B. Max* 290

Computers
A program for the integrated Michaelis–Menten equation*, *Guy Thomas, Jean-Christophe Thalabard and Catherine Girre* 292

Letters
Regulation of the acetylcholine receptor, *David C. Ogden, David Colquhoun and Alisdair J. Gibb* 294

Viewpoint
D_1 and D_2 dopamine agonist synergism: separate sites of action?, *G. S. Robertson and H. A. Robertson* 295

Reviews
Regulation of hormone-sensitive adenylate cyclase, *Alexander Levitzki* 299
Synthetic inhibitors of human neutrophil elastase*, *Diane Amy Trainor* 303
Adenylate cyclase supersensitivity: a general means of cellular adaptation to inhibitory agonists?, *John M. Thomas and Brian B. Hoffman* 308
Cyclic nucleotide-gated conductances: a new class of ion channels mediates visual and olfactory transduction, *Geoffrey H. Gold and Tadashi Nakamura* 312
FOCUS ON DISEASE: Pharmacotherapy of airway disease in cystic fibrosis, *W. E. Waltner, R. C. Boucher, J. T. Gatzy and M. R. Knowles* 316

Books
Statistics for Toxicologists, *by David S. Salsburg* 320
Perspectives on Receptor Classification: Receptor Biochemistry and Methodology Vol. 6*, *edited by J. W. Black, D. H. Jenkinson and V. P. Gerskowitch* 320
Mosby's Handbook of Pharmacology. Fourth Edition, *edited by Bruce D. Clayton* 321

SEPTEMBER

PCP–NMDA connection provides hope in cerebral ischemia but new direction for antipsychotics, *Gail Winger* 323

Current Awareness
The pathogenesis of the amnesia of Alzheimer's disease, *Ivan Izquierdo* 325
Activities of *Thalictrum* alkaloids, *Popat N. Patil and Jack L. Beal* 327
Does captopril elevate mood?, *Pierre E. Etienne and George S. Zubensko* 329
Adenosine and dopamine function in the CNS, *Michael F. Jarvis and Michael Williams* 330

Computers
Rapid sampling of biological signals using a simple assembly language loop, *Peter J. Rice, David A. Taylor and William W. Fleming* 332

Letters
Protein kinase C inhibitors are not selective, *L. G. Garland, R. W. Bonser and N. T. Thompson* 334
Progesterone metabolites enhance GABA activities, *Neil L. Harrison* 334
Voltage-dependent inhibition of the acetylcholine receptor, *George P. Hess and Jayant B. Udgaonkar* 335
Ogden *et al.* reply, *David Ogden, David Colquhoun and Alasdair Gibb* 335

Comment
Implications of the X-ray structure of deamino-oxytocin to agonist/antagonist–receptor interactions, *Victor J. Hruby* 336

Reviews
New selective antiviral agents active against the AIDS virus, *Erik De Clercq* 339
Perinatal neurotoxicology of psychotropic drugs, *Vincenzo Cuomo* 346
Modulations of voltage-dependent ion channels by extracellular signals, *Walter Rosenthal and Günter Schultz* 351
New insights into the renal secretion of drugs, *Andrew Somogyi* 354
HUMANS V. ANIMALS: The use of the human saphenous vein in pharmacology, *James R. Docherty* 358

Trade TiPS 361

Book Reviews
Apprentice to Genius – The Making of a Scientific Dynasty, *by Robert Kanigel* 362
Medical Pharmacology at a Glance, *by M. J. Neal* 363
New insights into Cell and Membrane Transport Processes, *edited by George Posté and Stanley T. Crooke* 364

OCTOBER

Endothelium-derived relaxing factor is identified as nitric oxide, *S. Moncada, A. G. Herman and P. Vanhoutte* 365

News
Receptor classification gets moving 368

Current Awareness
Regulation of insulin secretion by α_2-adrenergic agonists, *Noel G. Morgan* 369
Clinical goal in sight for small molecule renin inhibitors, *Joshua Boger* 370
Receptor- and signal transduction-related proto-oncogenes in breast cancer, *R. B. Dickson, N. Rosen, E. P. Gelmann and M. E. Lippman* 372

Current Techniques
Ocular inflammation: a pharmacological model, *Prasad Kulkarni and B. D. Srinivasan* 375

Letters
Polypharmic antagonists – a class of their own, *Jack Peter Green* 377
Strychnine: useful probe or not? *Cord-Michael Becker and Heinrich Betz* 379
Scientists and animal welfare, *Trevor Lakey* 380
Hormone and behavior, *Edwin Levitan* 380

Viewpoint
Pharmacokinetic and pharmacodynamic events: can they always be distinguished? *Bernard Testa* 381

Reviews
Animal models of anxiety: the effect of compounds that modify 5-HT neurotransmission, *Philippe Chopin and Mike Briley* 383
A new approach for evaluating the behavioral effects of antipsychotic drugs, *Gene M. Heyman and Bernard Beer* 388
Regulation of the L-type calcium channel, *Franz Hofmann, Wolfgang Nastainczyk, Axel Röhrkasten, Toni Schneider and Manfred Sieber* 393
Structure-activity relationships of omeprazole analogues and their mechanism of action*, *Per Lindberg, Arne Brändström and Björn Wallmark* 399
HUMANS V. ANIMALS: Human Heart β-adrenoceptors: a fair comparison with lymphocyte β-adrenoceptors? *Otto-Erich Brodde, Jan Jacob Beckeringh and Martin Christian Michel* 403

Software Review
Satori, *Hugh Robinson* 407

Book Reviews
A Textbook of Modern Toxicology, *edited by Ernest Hodgson and Patricia E. Levi* 408
Practical Teratology, *edited by Pamela Taylor* 409
Receptor Biochemistry and Methodology, Vol. 7 Phosphoinositides and Receptor Mechanisms, *edited by J. W. Putney, Jr.* 409
New concepts in Alzheimer's Disease, *edited by M. Briley, A. Kato and M. Weber* 410

NOVEMBER

New insights into the non-nicotine regulation of adrenal medullary function, *Philip D. Marley* 411

Drug Regulatory News 413

Current Awareness
MK-801, NMDA receptors and ischaemia-induced neurodegeneration, *J. A. Kemp, A. C. Foster, R. Gill and G. N. Woodruff* 414
Remembering the gut–brain connection, *Carlos A. Netto and Ivan Izquierdo* 415

This and that: on books and belle donne, antimony and anti-caffeine, *B. Max* 416

Letters
D_1 and D_2 dopamine agonist synergism and the nucleus accumbens, *David M. Jackson, Kuba Dreher and Svante B. Ross* 419
Pharmacology and statistics: the Bloody Oblivious tester, *A. R. Unwin* 420
Ian Kitchen replies 420

Comment
Alternative molecular interpretations of binding curves: compelling competition, *Antonio DeBlasi and Harvey J. Motulsky* 421

Viewpoint
Agonists, partial agonists, antagonists, inverse agonists and agonist/antagonists?, *Terry Kenakin* 423

TiPS Reviews
Muscarinic cholinergic receptor structure: molecular biological support for subtypes, *Anthony R. Kerlavage, Claire M. Fraser and J. Craig Venter* 426
5-HT_{1A} receptor-related anxiolytics, *Jörg Traber and Thomas Glaser* 432
Histamine and its lymphocyte-selective derivatives as immune modulators, *Kenneth L. Melmon and Manzoor M. Khan* 437
Synthesis, SARs and therapeutic potential of HMG-CoA reductase inhibitors, *Ta-Jyh Lee* 442
HUMANS V. ANIMALS: Effects of α- and β-adrenergic agonists, phosphodiesterase inhibitors and adenosine on isolated human heart muscle preparations, *Wilhelm Schmitz, Hasso Scholz and Erland Erdmann* 447

Book Reviews
Pharmacology, *by H. P. Rang and M. M. Dale* 451
Steroids in the nuclear zone, *edited by C. R. Clark* 451

DECEMBER

Celebrating one hundred issues, *J. J. Burns* 454
. . . and drinking to the next 100 issues, *Alison Abbott* 455

Reviews
Binding selectivity profiles for ligands of multiple receptor types: focus on opioid receptors, *Avram Goldstein* 456
The nicotinic acetylcholine receptor: molecular architecture of a ligand-regulated ion channel, *Jean-Pierre Changeux, Jerôme Giraudat and Michael Dennis* 459
Nicotinic acetylcholine receptors of nerve and muscle: functional aspects, *David Colquhoun, David C. Ogden and Alistair Mathie* 465
Regulation of receptor function by protein phosphorylation, *Richard Huganir and Paul Greengard* 472
Guanine nucleotide-binding regulatory proteins: mediators of transmembrane signaling, *Michael P. Graziano and Alfred G. Gilman* 478
Calcium-mobilizing receptors, *James W. Putney, Jr* 481

How does gastrin act to stimulate oxyntic cell secretion? *J. W. Black and N. P. Shankley* 486
The endothelial cell as a metabolic and endocrine organ, *J. R. Vane, R. J. Gryglewski and R. M. Botting* 491
The role of calcium in the pathogenesis of experimental arteriosclerosis, *A. Fleckenstein, M. Frey, J. Zorn and G. Fleckenstein-Grün* 496
5-HT: The Enigma Variations, *J. R. Fozard* 501
Does substance P act as a pain transmitter? *Masanori Otsuka and Mitsuhiko Yanagisawa* 506
Assessment of hyperplastic and neoplastic lesions of the thyroid gland, *Gerhard Zbinden* 511

Book Reviews
Adrenergic Receptors in Man, *edited by Paul A. Insel* 515
Anti-inflammatory Compounds, *edited by N. W. Nigel Williamson* 516
Pharmacologic Analysis of Drug-Receptor Interaction, *by Terence P. Kenakin* 516

ERRATA

Receptor or enzyme: the puzzle of NTE and organophosphate-induced delayed polyneuropathy, *M. K. Johnson and Marcello Lotti* (May, pp. 174–179) 311

A program for the integrated Michaelis–Menten equation, *Guy Thomas, Jean-Christophe Thalabard and Catherine Girre* (August, pp. 292–294; see also Jan '88) 398

Synthetic inhibitors of human neutrophil elastase, *Diane Amy Trainor* (August, pp. 303–307) 398

Perspectives on Receptor Classification: Receptor Biochemistry and Methodology Vol. 6 *edited by J. W. Black, D. H. Jenkinson and V. P. Gerskowitch* (August, pp. 320–321) 398

Structure–activity relationships of omeprazole analogues and their mechanism of action, *Per Lindberg, Arne Brändström and Björn Wallmark* (October, pp. 399–402) 452